

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An endoscope system comprising:

a first waveguide;

a second waveguide;

an optical coupler ~~which~~ configured to optically couple ~~couple~~ said waveguides to each other first waveguide to said second waveguide;

a low-coherent light source ~~arranged~~ provided on a proximal end of either one of said first and second waveguides, said low-coherent light source emitting low-coherent light to be incident on ~~this the~~ waveguide provided with said low-coherent light source;

a polygon mirror having a plurality of reflecting surfaces around its center axis, said reflecting surfaces differing from one another in tilt angle with respect to said center axis;

a supporting mechanism which supports said polygon mirror and rotates it about said center axis, said supporting mechanism being provided in an insertion portion of said endoscope system;

an incident optical member which guides low-coherent light emitted from a distal end of said first waveguide to a reflecting surface of said polygon mirror, said incident optical member being provided in said insertion portion;

an emission optical member which converges the low-coherent light reflected by said polygon mirror, said emission optical member being provided in said insertion portion;

a reflecting member which reflects the low-coherent light emitted from a distal end of said second waveguide so that the low-coherent light returns into to said second waveguide as reference light;

an optical path length adjusting mechanism ~~which makes~~ configured to enable a relative change between a length of an optical path extending from said optical coupler to an object through said first waveguide and ~~that~~ a length of another optical path extending from said optical coupler to said reflecting member through said second waveguide;

a photodetector ~~arranged~~ provided on a proximal end of the other of said first waveguide and said second waveguide, said photodetector receiving light from ~~this~~ said other of said first waveguide and said second waveguide; and

a signal processor ~~generating~~ configured to generate a tomographic image of the object on the basis of a detection signal output from said photodetector while said optical

path length adjusting mechanism makes the relative change and while said support mechanism rotates said polygon mirror.

2. (currently amended) The endoscope system according to claim 1, wherein said signal processor forms a tomographic image ~~concerning both~~ associated with the surface of said object and the subsurface interior ~~of the same~~ thereof.

3. (currently amended) The endoscope system according to claim 1, wherein said optical path length adjusting mechanism ~~moves~~ is configured to move said reflecting member so as to approach or recede from the distal end of said second waveguide to change the length of the optical path extending from said optical coupler to said reflecting member through said second waveguide with respect to the length of the optical path extending from said coupler to said object through said first waveguide.

4. (currently amended) The endoscope system according to claim 1, wherein said low-coherent light source ~~includes~~ comprises a super-luminescent diode.

5. (currently amended) The endoscope system according to claim 1, further comprising:

an illumination optical system ~~which irradiates~~ configured to irradiate said object with visible light or excitation light for exciting self-fluorescence of said object;

an objective optical system ~~which converges~~ configured to converge light from the surface of said object to form an image of the surface of said object; and

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a pick-up device ~~which picks~~ configured to pick up the image of the surface of said object.

6. (currently amended) The endoscope system according to claim 5, further comprising:

a visible light source ~~which emits~~ configured to emit visible light;

an excitation light source ~~which emits~~ configured to emit excitation light;

and

a light source switching mechanism ~~which selects~~ configured to select from either the visible light emitted from said visible light source or the excitation light emitted from said excitation light source to enter said illumination optical system, whereby

said objective optical system forms a visible-light image of said object when the visible light is introduced to said illumination optical system by said light source switching ~~means~~ mechanism, and

said objective optical system forms a self-fluorescent image of said object when the excitation light is introduced to said illumination optical system by said light source switching ~~means~~ mechanism.

7. (currently amended) The endoscope system according to claim 5, further comprising

~~displaying means for displaying a monitor configured to display~~ the image of the surface of said object, picked up by said pick-up device and the tomographic image of said object formed by said signal processor.

8. (canceled)

9. (withdrawn) ~~The polygon mirror according to claim 8, A polygon mirror comprising a plurality of reflecting surfaces around its center axis, said reflecting surfaces differing from each other in tilt angle with respect to said center axis, said polygon mirror rotating about said center axis~~ wherein,

among said reflecting surfaces, each of those reflecting surfaces other than the reflecting surface having the smallest tilt angle has a tilt angle greater by a predetermined amount than that of the reflecting surface adjacent thereto in a predetermined direction of rotation about said center axis.

10. (withdrawn) The polygon mirror according to claim 9, wherein

all of said reflecting surfaces have tilt angles of identical polarity with respect to said center axis.

11. (withdrawn) A scanning optical system comprising:
a polygon mirror having a plurality of reflecting surfaces around its center axis, said reflecting surfaces differing from each other in tilt angle with respect to said center axis;

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a supporting mechanism which supports said polygon mirror and rotates it about said center axis; and

an incident optical system fixed with respect to said supporting mechanism, said incident optical system introducing light toward said reflecting surfaces of said polygon mirror.

12. (withdrawn) The scanning optical system according to claim 11, further comprising

an emission optical member fixed with respect to said supporting mechanism, said emission optical member converging light reflected by said reflecting surfaces of said polygon mirror.

13. (withdrawn) The scanning optical system according to claim 12 wherein said emission optical member is an $f\theta$ lens.

14. (new) The endoscope system according to claim 1, said supporting mechanism being provided in a tip of said insertion portion.

15. (new) The endoscope system according to claim 1, said incident optical member being provided in a tip of said insertion portion.

16. (new) The endoscope system according to claim 1, said emission optical member being provided in a tip of said insertion portion.